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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER
JIANG, DONG

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 10/22/2002

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/786,130	TORIGOE ET AL.	
	Examiner	Art Unit	
	Dong Jiang	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-9* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6 & 7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED OFFICE ACTION

Applicant's election with traverse of Group I invention, directed to SEQ ID NOs:1 and 32 in Paper No. 9 is acknowledged. The traversal is on the ground(s) that SEQ ID NO:1 of Group I and SEQ ID NO:2 of Group II are human and mouse homologues of the same protein, and that a complete search would necessarily cover both homologues, therefore, there would be no serious burden in examining both groups. This is not found persuasive because, while a single search of SEQ ID NO:1 or 2 may reveal the results of the other homologues, it is impossible to be certain whether a resulting sequence with certain degree of identity to the query sequence is indeed the other claimed sequence, thus separate searches are required for the mouse and human sequences, which constitute a serious burden.

The requirement is still deemed proper and is therefore made FINAL.

Applicant's amendment in paper No. 11, filed on 07 August 2002 is acknowledged and entered. Following the amendment, claim 2 is amended.

Currently, claims 1-9 are pending and under consideration.

Formal Matters:

Claims 1, 2 and 6 are objected to for encompassing a non-elected subject matter, SEQ ID NO:2 or 33. The applicant is required to amend the claims to read only upon the elected invention.

New Matter Rejection

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the

claimed invention. Applicants have not pointed out, nor can the Examiner locate, the basis in the specification for the peptide fragments comprise 4 to 29 contiguous amino acid residues in the amino acid sequence of SEQ ID NO:1 recited in the newly added claim. It is noted that the fragments having SEQ ID NO:3-23 are fragments of SEQ ID NO:1, and range from 4 to 29 amino acids in size. However, they represent specific sequence fragments in SEQ ID NO:1, and disclosure of those species does not constitute a disclosure of the generic concept of fragments comprising 4 to 29 contiguous amino acid residues of SEQ ID NO:1, as claimed in claim 2. This is a new matter rejection.

Objections and Rejections under 35 U.S.C. §101 and §112:

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are drawn to a protein or a DNA (claims 1 and 5, for example), which read on a product of nature and thus, is unpatentable to applicant. It is suggested that applicant use the language "isolated" or "purified" in connection with the polypeptide to indicate the hand of the inventor. See MPEP 2105.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 fails to adequately point out that which applicants see as their invention because it reads on a protein such as an IL-18 receptor or an anti-IL-18 antibody, which may comprise "a part" of SEQ ID NO:1, and would certainly bind to IL-18. However, such a protein is not the

subject matter which applicant regards as the invention. The addition of "A functional fragment (or region)" is suggested for "a part" in the claim.

Claim 6 is indefinite because it is unclear what degree of sequence similarity is "homologous" to SEQ ID NO:32.

Claim 7 is indefinite because it is unclear whether the "suppressor" containing the IL-18 BP indicates a composition or a fusion protein. The metes and bounds of the claim, therefore, cannot be determined.

Claim 8 is indefinite because it is unclear what is intended by "susceptive diseases". The claim is further indefinite for the recitation of "an effective ingredient" in line 2 because it is unclear what it is effective for. Additionally, it is unclear what is intended by "an agent" containing the IL-18 BP, and whether it is a composition or a fusion protein. The metes and bounds of the claim, therefore, cannot be determined.

Claim 9 is similarly indefinite for reciting "susceptive diseases". The claim is further indefinite because it is unclear what is intended by "an anti-immunopathic agent". The specification does not define such. The metes and bounds of the claim, therefore, cannot be determined.

The remaining claims are rejected for depending from an indefinite claim.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for claims limited in scope to an IL-18 binding protein having SEQ ID NO:1, functional fragments thereof, and the DNA encoding SEQ ID NO:1, does not reasonably provide enablement for claims to all IL-18 binding proteins which comprise "a part" of SEQ ID NO:1, small fragments of SEQ ID NO:1, and DNA encoding the same or homologues thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue" include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

The claims are directed to an IL-18 binding protein (IL-18BP) comprising a part or the whole of SEQ ID NO:1, (claim 1, for example), and small fragments comprising 4 to 29 contiguous amino acid residues of SEQ ID NO:1 (claim 2, for example), or DNA encoding said polypeptides or fragments, and homologous thereof (claim 6, for example), which read on any or all proteins, such as an IL-18 receptor or an anti-IL-18 antibody, which may comprise "a part" (2 amino acids, for example) of SEQ ID NO:1, and would certainly bind to IL-18, and any or all randomly selected fragment or homologues. However, the specification merely teaches one IL-18BP with particularity, SEQ ID NO:1 or 2, and provides no guidance nor working example as to how the skilled artisan could make a commensurate number of such species. Therefore, it would require undue experimentation to determine the proteins which share common sequence with SEQ ID NO:1, and bind to IL-18 prior practice the invention as claimed. Furthermore, with respect to the small fragments comprising 4 to 29 contiguous amino acid residues of SEQ ID NO:1, the disclosure provides no instruction/guidance as to the structural and functional relationship of the protein, nor working examples of any of such small fragments, which would be within the limitations of the claim. Given the fact that the IL-18BP of SEQ ID NO:1 has 164 amino acids, such small fragments are unlikely to possess functional activity. Therefore, it is unpredictable that such a small fragment, even from a functional region, would have the functional property, and undue experimentation would be required prior using the fragments for any desired purpose as claimed.

Due to the lack of direction/guidance presented in the specification regarding to how to make/use all possible IL-18 binding proteins as claimed, homologues or fragments thereof, the absence of working examples directed to same, the unpredictable nature of the invention, and the breadth of the claims which embrace a broad class of structural fragments and variants, undue experimentation would be required of the skilled artisan to make/use the claimed invention in its full scope.

Claim 1 and the dependent claims 2-9 are further rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116).

The specification discloses *two* amino acid sequences with particularity, human and mouse IL-18BP with SEQ ID NO:1 and 2, respectively, and specific trypsin-digested fragments thereof. No other IL-18BP homologues or fragments/parts meeting the limitations of the claims were ever identified or particularly described.

The present claims 1-9 encompass significant structural variation within the claimed fragments (claims 1 and 2, for example), and homologues (claim 6, for example) of SEQ ID NO:1. The specification discloses the polypeptides of SEQ ID NO:1 and 2. With the exception of SEQ ID NO:1 and 2, and the specific trypsin-digested fragments thereof (SEQ ID NO:3-23 for human), the skilled artisan cannot envision the detailed chemical structure of the encompassed various homologues and fragments of SEQ ID NO:1, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation.

Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to

lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO:1 and 2, and the specific trypsin-digested fragments thereof, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Rejections Over Prior Art:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al. for locus AA311795 (provided by applicants).

Adams discloses a polynucleotide comprising nucleotides 35-485 of SEQ ID NO:32 of the present invention with 99.3% sequence similarity (see appended computer printout of sequence search results). The cited polynucleotide is a cDNA (from mRNA), indicating the expression of the gene. When it is translated, it would give a polypeptide comprising amino acid residues 13-161 of SEQ ID NO:1 with 98% sequence similarity (see appended computer printout of sequence search results). Although the reference does not teach the polynucleotide encodes a polypeptide having IL-18 binding activity, the polypeptide encoded thereby would have inherently possess such activity as it comprises 88% of the sequence of SEQ ID NO:1 with 98% sequence similarity, which qualify the polypeptide as "a part" of SEQ ID NO:1, and comprising 4 to 29 contiguous amino acids of SEQ ID NO:1. Additionally, the cited sequence is "a nucleotide sequence *homologous* to" SEQ ID NO:32. Therefore, the reference anticipates claims 5 and 6.

Small fragment of 4 amino acids

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al. for locus AA311795 as applied to claims 5 and 6 above, and further in view of Sibson et al., WO94/01548.

The teachings of the primary reference are summarized above. The primary reference did not specifically disclose the expression of the protein encoded by the disclosed nucleic acid sequences.

Sibson discloses that it is generally useful to place a desired cDNA sequence into an expression vector, host cell, and express the encoded protein. See pages 8-13.

It would have been obvious to the person of ordinary skill in the art at the time the invention was made to use the cDNA sequence of the primary references to express and then isolate the encoded polypeptide as taught by Sibson in view of Sibson's suggestion that it would be desirable to do so, as cited above.

Conclusion:

No claim is allowed.

Advisory Information:

Any inquiry concerning this communication should be directed to Dong Jiang whose telephone number is 703-305-1345. The examiner can normally be reached on Monday - Friday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler, can be reached on (703) 308-6564. The fax phone number for the organization where this application or proceeding is assigned is 703-308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Lorraine Spector

LORRAINE SPECTOR
PRIMARY EXAMINER

Dong Jiang, Ph.D.
Patent Examiner
AU1646
10/8/02